



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/410,520	10/01/1999	STEVEN J. HARRINGTON	XER-2-0279	6975

7590 04/17/2003

ALBERT P SHARPE III ESQ  
FAY SHARPE FAGAN  
MINNICH & MCKEE  
1100 SUPERIOR AVENUE 7TH FLOOR  
CLEVELAND, OH 441142518

EXAMINER

AN, SHAWN S

ART UNIT	PAPER NUMBER
----------	--------------

2613

DATE MAILED: 04/17/2003

3

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
**09/410,520**

Applicant(s)  
**Steven Harrington**

Examiner  
**Shawn An**

Art Unit  
**2613**



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-13 is/are allowed.
- 6) ☒ Claim(s) 1-9 and 14-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 2 6) ☐ Other: \_\_\_\_\_

Art Unit: 2613

## DETAILED ACTION

### *Drawings*

1. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.
2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show frame memory 42 as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2 and 9 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Hay et al (4,238,828).

**Regarding claim 1**, Hay et al discloses a method for identifying orientation in a free space of a preselected object from a video camera (Fig. 1, 6), comprising the steps of:

detecting the object from the image by recognizing relative position of points on the objects image within the view plane (col. 1, lines 4-8);

Art Unit: 2613

calculating coordinate positions of the points at an object position in free space based upon the positions and known camera geometric dimensions (Fig. 4); and  
converting the coordinate positions into location of the object (Fig. 8).

**Regarding claim 2**, Hay et al discloses the object comprising three preselected co-linear points (Fig. 4, A-C).

**Regarding claim 9**, Hay et al discloses distance between a view point and a view plane of the camera, and converting the relative positions of the point based on the given distance and the known spacing of the points to an object distance in the free space between the object and the plane (Figs. 4 and 8).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3-8 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hay et al (4,238,828) in view of Naimark et al (4,857,).

**Regarding claims 3-4 and 14-16**, Hay et al discloses a system for identifying a position of a preselected object in a three dimensional free space captured in a video camera (Fig. 1, 6), the system comprising:

frame memory (Fig. 3) comprising a pixel representation of the image;

a processor (Fig. 1, 17) for detecting the relative position of the indicia from the pixel representation (col. 1, lines 4-8), and for computing coordinate positions of the indicia of the object in free space based upon the relative positions and known system geometry (Fig. 4),

Art Unit: 2613

wherein the processor includes means for verifying the coordinate positions are consistent with a space positions of the object (Fig. 8).

Hay et al does not specifically disclose identifying a pointing directions of a preselected object.

However, Naimark et al teaches a position detecting input device such as a wand (preselected object) for identifying a pointing directions (position displacement) (col. 6, lines 13-27) such as an alignment indicator for indicating a pointing direction (col. 3, lines 13-22).

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing a system for identifying a position of a preselected object in a three dimensional free space as taught by Hay et al to incorporate Naimark et al's means for identifying the pointing directions of a preselected object (wand) and comprising an alignment indicator for indicating a pointing direction as a convenient way for an user to interface such as in computer graphics for communicating an input signal.

**Regarding claim 5**, Naimark et al teaches a wand for communicating a pointing direction (col. 6, lines 13-27), and detecting pixel location on the view plane of beads (corresponding points) on the wand (col. 3, lines 13-36).

**Regarding claims 6-7**, the Examiner takes official notice that an object detecting camera system typically (conventionally) detects a property of the color such as chrominance, luminance, and/or hue.

**Regarding claim 8**, the Examiner takes official notice that detecting a center pixel location of an object such as face or bead is well known for calculating a distance between the center and end points and for finding a center of a contour.

Art Unit: 2613

*Allowable Subject Matter*

7. Claims 10-13 are allowed.

8. The following is an examiner's statement of reasons for allowance:

**claims 10-13** recite the novel feature of a method for determining a location of a wand, comprising the steps of:

capturing video image of the wand on a view plane of a camera system wherein the image is represented by a memory including relative positions of the beads;

determining centers of the beads on the view plane and relative spacings between the centers; and

calculating coordinate positions of the beads in the free space based upon the relative spacings and known camera system geometries of generating the video image.

The art of record fails to anticipate or make obvious the novel features as specified in these claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

*Conclusion*

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A) Prenninger (5,267,014), Position and orientation measurement device.

B) Hedges et al (6,519,029 B1), Low cost transmitter with calibration means for use in position measurement systems.

C) Kalfas et al (5,517,990), Stereotaxy wand and tool guide.

Art Unit: 2613

- D) Purcell (4,977,315), Liquid crystal position determining system and wand device.
- E) XEROX CORP (JP 2001167257A), Wand pointing position determination for data communication with processor.

10. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-4700.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shawn An whose telephone number (703) 305-0099 and schedule are Tuesday through Friday.

SHAWN S. AN  
PATENT EXAMINER



SSA

April 15, 2003